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NEW PALLIFERA (PANCALYPTUS) FROM ARIZONA

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During the summer of 1910, Henry A. Pilsbry, James H. Ferriss, and L. E. Daniels collected land snails in the Santa Rita Mountains, located 40 miles south of Tucson, in southern Arizona. An account of this trip appeared in 1915 (Pilsbry and Ferriss), in which their route was traced starting at the western base of the range in Agua Caliente Canyon, then up and over the summit north of Mt. Wrightson (Old Baldy) and down the eastern slope. A list of species of snails collected, with their localities, appeared in this paper. Although slugs were not mentioned in the 1915 report, Pilsbry (1917) later stated that several slugs had been found during their 1910 trip into the Santa Ritas and three of the slugs were assigned to the genus *Philomycus*. He noted that this was a new record for Arizona and that this locality was more than 1,000 miles southwest of any record for the genus in the United States. Pilsbry named the slug *Philomycus (Pallifera) arizonensis*.

In 1948, Pilsbry stated that the slugs collected in 1910 had been subsequently lost or misplaced and that "in the absence of a sufficient description, it can hardly claim a place among known species" (Pilsbry, 1948:770). The only description of *P. arizonensis* is as follows: "Color, above bister, below snuff brown (in alcohol). Jaw with few ribs. It is 20 mm. long, the sole 1.8 mm. wide. Ribs of the jaw extremely weak" (*loc. cit.*). The type locality is Camperel Canyon, on the eastern slope of the Santa Rita Mountains, at an elevation of 6800 feet.

In August, 1957, Miles found several slugs belonging to the genus *Pallifera* in Madera Canyon, Santa Rita Mountains, at an elevation of 6400 feet. This site is near the type locality for

Philomycus arizonensis Pilsbry, although situated on the west side of Mt. Wrightson, rather than on the east. Probably these slugs represent Pilsbry's lost species. Additional specimens have been collected since then. An anatomical examination revealed the fact that this species of *Pallifera* must be assigned to the subgenus *Pancalyptus*, which Pilsbry (1948) established to embrace *Pallifera costaricensis alticola* H. B. Baker and probably "all Philomycidae in tropical America, from Mexico to Columbia" (*op. cit.*, p. 750). This subgenus differs from the typical eastern North American *Pallifera* in that the duct of the spermatheca is not enlarged and the free oviduct is very short.

During the several years extending from 1951 until the date of the Madera Canyon discovery (1957), Mead had collected a total of 10 slugs belonging to *Pallifera* from two localities in the Santa Catalina Mountains, 50 miles north of the Santa Ritas. Additional specimens have been collected recently and a comparison made with the Santa Rita slugs. Although the internal anatomy of specimens from the two ranges seem indistinguishable, there are consistent external differences that warrant sub-specific treatment.

The question of whether the slugs inhabiting Madera Canyon are conspecific with Pilsbry's *Philomycus arizonensis* may never be answered, unless the lost type material comes to light. We are tempted to conclude in the affirmative, but the possibility that two or more species of *Pallifera* exist in the Santa Ritas cannot be discounted. Consequently, in the absence of type material and because of what Pilsbry himself admitted was an inadequate description, we consider *Philomycus (Pallifera) arizonensis* Pilsbry a *nomen dubium*, and accordingly, here describe the slug recently found inhabiting the Santa Catalina and Santa Rita mountains as a new species.

PALLIFERA (PANCALYPTUS) PILSBRYI, new species.

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Philomycus (Pallifera) arizonensis Pilsbry, 1917, *Nautilus*, 30:119; 1948, *Mon. Land Moll. North America*, 2(2):770. [?]

Type Locality: Bear Wallow, Santa Catalina Mountains, Pima Co., Arizona. Elevation ca. 7600 feet. Beneath logs and in decayed logs. This slug has also been collected in Marshall Gulch at 7800 feet in the same range. *Type lot*: Holotype (dissected) and one paratype (undissected) collected 25 July, 1960, deposited in the California Academy of Sciences; one paratype col-

lected 23 October, 1955, deposited Acad. Nat. Sci. of Philadelphia; and two paratypes (dissected) have been retained in the Museum of Invertebrate Zoology at the University of Arizona.

Living Animal: Up to 30 mm. in length, although most specimens have ranged from 15 to 19 mm. when crawling; 2.5 mm. wide in the largest specimen. Sole considerably narrower, 0.8 mm. wide in a specimen whose width was 2 mm. when crawling. Mantle covers the entire body except the posterior tip of foot. The head is usually not visible when the animal is active, only the tentacles protrude from beneath the mantle. Color is brown with a faint grayish cast. A very fine, light gray stippling is present dorsally and laterally on the anterior (mainly) and posterior portions of the mantle and may be present in small clusters or in single dots anywhere along the mantle. This fine stippling varies with the individual, but is always present. Tentacles dark gray to black, immaculate. Color of the sole is light gray, possessing rust-colored pigmentation on the surface from the anterior tip posteriorly to about the level of the pneumostome; this rust-colored pigmentation then extends posteriorly only along the margins of the sole of the entire length of the animal, becoming fainter posteriorly. The pneumostome appears as a whitish groove slanting dorsoposteriad, situated about 2 mm. from the anterior end of the mantle on the right side.

Genitalia: Vagina and genital atrium are light yellow in color, the walls of both composed of glandular alveoli which differ strikingly from other portions of the genitalia. The penis, which lacks a verge, is narrower than the vagina and is swollen distally; a muscular sheath encloses the thinner walled, basal third of this organ, but not the vas deferens. The penis and sheath constrict somewhat near the genital atrium. Otestis dark gray, partly embedded in the digestive gland on the right side midway the length of the animal. Hermaphroditic duct cream colored, immaculate, sinuous but not convoluted. Spermatheca light gray, oval, situated between the anterior portions of stomach and digestive gland, attached to the uterus by connective tissue. Prostate white, relatively large. Duct of the spermatheca of equal diameter throughout its length; its diameter is about equal to that of the vas deferens and is considerably smaller in diameter than either the vagina or free oviduct. The free oviduct is very short.

Jaw: The color is golden brown (in fresh material) and possesses the peculiar chitinization of the retractor, (simulating the condition in the Succineidae) mentioned by Baker (1930) in connection with *Pallifera costaricensis alticola* and *P. c. crosseana*. The ribs are poorly developed; 4 and 5 have been seen. The jaw of one specimen lacked ribs. Fine longitudinal striations are evident on the chitinized portion of the retractor.

That the affinities of this species are with the subgenus

Pancalypsus is evident from the very slender spermathecal duct and the short free oviduct. Its nearest known relative is *P. costaricensis alticola* H. B. Baker, from which it differs in its considerably smaller size, in color and in lack of definite mantle markings. *P. c. alticola* possesses a light golden dorsum which bears jet-black lateral and mid-dorsal stripes.

PALLIFERA PILSBRYI SANTARITANA, new subspecies.

Type locality: Madera Canyon, Santa Rita Mountains, Santa Cruz Co., Arizona. Elevation ca. 6400 feet. Beneath rocks and logs on the west side of the canyon about 1.5 miles up the trail to Mt. Wrightson. *Type lot*: Holotype (dissected) collected 2 August, 1960, and one paratype (undissected) collected 13 July, 1960, deposited in the California Academy of Sciences; and one paratype (dissected) collected 13 July, 1960, has been retained in the Museum of Invertebrate Zoology at the University of Arizona.

This slug differs from *P. pilsbryi pilsbryi* of the Santa Catalinas in two consistent characteristics of external morphology. In life, the color is dark gray, with little or no trace of brown which characterizes the nominate subspecies. Furthermore, the rust-colored pigmentation on the margins of the sole extends posteriorly only about one-third the length of the animal in *P. p. santaritana*, while in the nominate subspecies this pigmentation extends the entire length. By using living animals from both mountain ranges, these two subspecies may be easily distinguished. There appears to be no differences in the internal anatomy of the two subspecies.

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TWENTY-SIXTH ANNUAL MEETING OF THE AMERICAN MALACOLOGICAL UNION

The A.M.U. met at Montreal, Canada, from August 9 to 12, 1960. The principal meetings were held in the auditorium of the Redpath Museum of McGill University, at the northern base of